# C L A I M S

1. A method of assembling tyres for vehicle wheels, comprising the steps of:

- disposing on a primary drum (13), a carcass structure (3) comprising at least one carcass ply (10) in engagement with annular anchoring structures (7) axially spaced apart from each other;
- disposing a belt structure (4) comprising at least one belt layer (11a, 11b, 12), on an auxiliary drum (15);
- picking up the belt structure (4) from the auxiliary drum (15) to transfer it to a position coaxially centred with respect to the carcass structure (3);
- applying a tread band (5) onto the belt structure (4), application of the tread band (5) being carried out by winding up at least one continuous strip-like element of elastomer material in contiguous circumferential coils around the belt structure (4).

2. A method as claimed in claim 1, wherein application of the tread band (5) is carried before removal of the belt structure (4) from the auxiliary drum (15).

3. A method as claimed in claim 1, wherein the continuous strip-like element is fed from a delivery member (18, 18a) placed at a region close to the belt structure (4), simultaneously with winding up of the strip-like element itself around the belt structure (4).

4. A method as claimed in claim 3, wherein feeding of the continuous strip-like element is carried out by extrusion through said delivery member (18, 18a).

5. A method as claimed in claim 3, wherein concurrently with application of the continuous strip-like element, the following steps are carried out:

- giving the auxiliary drum (15) carrying the belt structure (4) a circumferential-distribution rotatory motion around a geometric rotation axis thereof, so that the continuous strip-like element is circumferentially distributed around the belt structure (4);
- carrying out controlled relative transverse-distribution displacements between the auxiliary drum (15) and delivery member (18, 18a) so that with said strip-like element a plurality of coils disposed in mutual side by side relationship are formed, in order to define the tread band (5).

6. A method as claimed in claim 5, wherein said transverse-distribution displacements are carried out by movement of the auxiliary drum (15).

7. A method as claimed in claim 5, wherein driving in rotation and movement of the auxiliary drum (15) are carried out by an actuating assembly (19a) engaging the auxiliary drum itself.

8. A method as claimed in claim 3, further comprising the step of moving the auxiliary drum (15) away from said delivery member (18, 18a) to position it in front of devices (16) for application of the belt structure, before carrying out transfer of the belt structure (4).

9. A method as claimed in claim 8, wherein after formation of the belt structure (4) and before carrying out application of the continuous strip-like element, the step of moving the auxiliary drum (15) towards the

delivery member (18, 18a) is carried out, starting from a position at which the auxiliary drum (15) interacts with devices (16) for application of the belt structure.

10. A method as claimed in claim 1, wherein the step of arranging the carcass structure (3) is carried out by assembling the component parts of the carcass structure itself on the primary drum (13).

11. A method as claimed in claim 1, wherein the belt structure (4) transferred to a coaxially centred position on the carcass structure (3) is coupled with said carcass structure following a step of shaping the carcass structure (3) itself into a toroidal configuration.

12. An apparatus for assembling tyres for vehicle wheels comprising:
- a primary drum (13) arranged to support a carcass structure (3) comprising at least one carcass ply (10) in engagement with anchoring structures (7) axially spaced apart from each other;
- an auxiliary drum (15) set to carry a belt structure (4);
- at least one unit (17) for application of a tread band (5) onto the belt structure (4);
- a transfer member (28) to move the belt structure (4) from the auxiliary drum (15) to the primary drum (13);
wherein said at least one application unit (17) comprises at least one delivery member (18, 18a) to lay down at least one continuous strip-like element of elastomer material in contiguous circumferential coils on the belt structure (4).

13. An apparatus as claimed in claim 12, wherein said delivery member comprises at least one extruder (18, 18a).

14. An apparatus as claimed in claim 12, wherein said application unit (17) comprises an actuating assembly (19) set to drive the auxiliary drum (15) in rotation around a geometric axis thereof so that said strip-like element is circumferentially distributed on the belt structure (4), and to cause controlled relative displacements between the auxiliary drum (15) and said at least one delivery member (18, 18a) for distribution of said strip-like element so as to form said coils disposed in mutual side by side relationship to define the tread band (5).

15. An apparatus as claimed in claim 14, wherein said actuating assembly (19) operates on the auxiliary drum (15) to move it relative to the delivery member (18, 18a).

16. An apparatus as claimed in claim 14, wherein said actuating assembly is integrated into a robotized arm (19a) engaging the auxiliary drum (15).

17. An apparatus as claimed in claim 14, wherein the actuating assembly (19) comprises a carriage (19b) movable along a guide structure (27) between a first position at which it supports the auxiliary drum (15) at a location in front of application devices (16) of the belt structure, and a second position at which it supports the auxiliary drum (15) at a location in front of said at least one delivery member (18, 18a).

18. An apparatus as claimed in claim 14, further

comprising devices (16) for application of belt layers on the auxiliary drum (15) to form said belt structure (4), wherein said actuating assembly (19) is arranged to cause translation of the auxiliary drum (15) towards said at least one delivery member (18, 18a) starting from a position at which the auxiliary drum (15) interacts with the devices (16) for application of the belt structure.